

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

AYLUS NETWORKS, INC.,

Plaintiff,

v.

APPLE INC.,

Defendant.

CASE NO. 3:13-cv-04700-EMC

**DECLARATION OF UNIVERSAL PLUG  
AND PLAY SPECIFICATION AUTHOR  
SHO KOU IN SUPPORT OF DEFENDANT  
APPLE INC.'S RESPONSIVE CLAIM  
CONSTRUCTION BRIEF**

Date: Nov. 10, 2014

Time: 2:30 p.m.

Place: Courtroom 5, 17th Floor

Judge: Honorable Edward M. Chen

1 I, Sho Kou, declare as follows:

2 **I. EXPERIENCE AND ASSIGNMENT**

3 1. I am a co-author of two Universal Plug and Play (“UPnP”) specifications, each  
4 dated June 25, 2002. These specifications are attached to this declaration as **Exhibits 10 and 11**.  
5 The first UPnP specification is titled, “ContentDirectory:1, Service Template Version 1.01,” and  
6 defines a service by which UPnP Media Servers allow UPnP clients to locate media that the  
7 server is capable of providing. The second UPnP specification is titled, “RenderingControl:1,  
8 Service Template Version 1.01,” and defines a service that allows UPnP Control Points to control  
9 a Media Renderer’s display characteristics, such as brightness and contrast.

10 2. I have been involved with UPnP technology since at least 2001 and I have  
11 extensive experience with UPnP. My experience with UPnP also is based in part on my work  
12 with Digital Living Network Alliance (“DLNA”) guidelines, which are built upon UPnP  
13 standards. DLNA is a trade organization that establishes guidelines to enable the sharing of  
14 digital media between multimedia devices, much like the UPnP specifications. DLNA-certified  
15 products include televisions, DVD and Blu-ray players, game consoles, digital media players,  
16 photo frames, cameras, network-attached storage devices, personal computers, and smartphones,  
17 among others. I have worked with DLNA guidelines for over ten years. I have participated in the  
18 DLNA Interoperability and Certification Committee, Certification and Logo subcommittee, and  
19 Compliance and Test subcommittee. I also have helped establish the DLNA Certification  
20 Program, which certifies that devices are DLNA complaint. DLNA uses UPnP for media  
21 management, discovery, and control.

22 3. More generally, I have over 35 years of software engineering experience,  
23 including over thirteen years of experience as a programmer at IBM, over eleven years of  
24 experience as an engineer at Sony, and over five years of experience as a software architect at my  
25 current employer, Allegro Software Development Corporation. My work at Allegro focuses on  
26 DLNA, and my work at Sony focused on DLNA and UPnP.

27 4. I am a named inventor on ten U.S. patents, many of which deal with device  
28 interoperability.

5. My resume is attached to this declaration as **Exhibit 12**.

6. I have been asked to consider and provide this declaration concerning the meaning to a person of ordinary skill in the art of certain claim limitations from U.S. Patent No. RE44,412.

## **II. UNIVERSAL PLUG AND PLAY (“UPNP”)**

7. The ’412 patent specification discusses UPnP concepts and expressly refers to UPnP several times, and the ’412 patent claims use terminology from the UPnP specifications such as “control point,” “media server,” and “media renderer.” I will therefore provide an overview of UPnP here.

8. UPnP is defined by various specifications published by the UPnP Forum, a consortium of companies. I co-authored two of these specifications, the “ContentDirectory” and “RenderingControl” specifications, as described above. Other UPnP specifications include the “AV Architecture,” “MediaServer,” “MediaRenderer,” “ConnectionManager,” and “AVTransport” specifications.

9. Attached to this declaration as **Exhibit 13** is a true and correct copy of the UPnP AV Architecture specification, dated June 12, 2002.

10. Attached to this declaration as **Exhibit 14** is a true and correct copy of the UPnP MediaServer specification, dated June 25, 2002.

11. Attached to this declaration as **Exhibit 15** is a true and correct copy of the UPnP MediaRenderer specification, dated June 25, 2002.

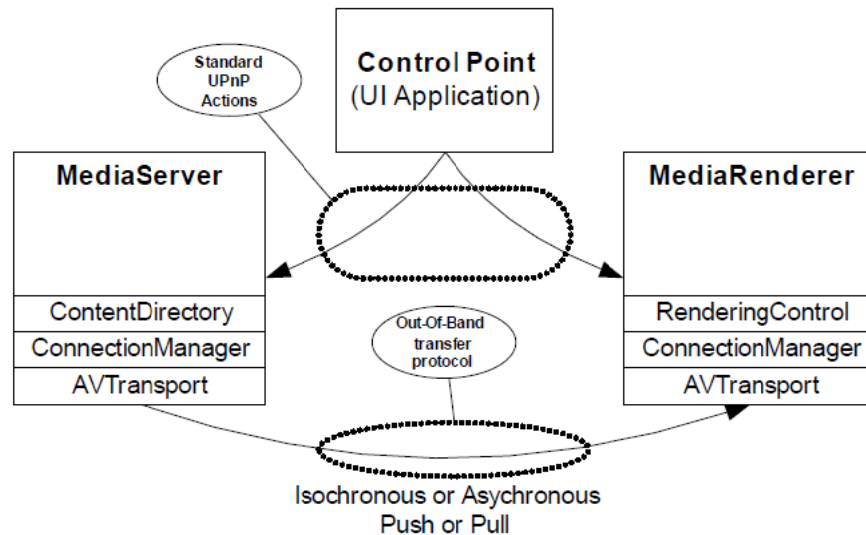
12. Attached to this declaration as **Exhibit 16** is a true and correct copy of the UPnP ConnectionManager specification, dated June 25, 2002.

13. Attached to this declaration as **Exhibit 17** is a true and correct copy of the UPnP AVTransport specification, dated June 25, 2002.

14. All of these UPnP specifications were published on the UPnP Forum website, [www.upnp.org](http://www.upnp.org), shortly after their completion in June 2002. Attached to this declaration as **Exhibit 18** is a true and correct copy of a web page from archive.org showing an October 7, 2002 capture of a [www.upnp.org](http://www.upnp.org) web page containing all of the UPnP specifications referred to above, which confirms that all of the UPnP specifications described above were available on the UPnP

Forum website at least as early as October 7, 2002. All of these specifications are still available on the UPnP Forum website today.

15. UPnP includes an architecture for distributing digital audio and video called the “UPnP AV Architecture.” The UPnP AV Architecture uses a trio of interacting devices: a Control Point, a MediaServer, and a MediaRenderer, as shown below.



Ex. 13 at 5, Fig. 3. This figure refers to the “ContentDirectory” and “RenderingControl” services defined by the UPnP specifications that I co-authored. Exs. 10-11.

16. The MediaServer stores content and the MediaRenderer renders media content. The Control Point manages the operation of the MediaServer and MediaRenderer. The Control Point obtains from each of the MediaServer and a MediaRenderer a list of the transfer protocols and data formats supported by that device, selects a matching pair of transfer protocols and data formats, and (in the typical case) informs the MediaServer and MediaRenderer that an outgoing/incoming connection is about to be made using the selected transfer protocol and data format. Ex. 13 (UPnP AV Architecture specification) at 9 (steps 3-5).

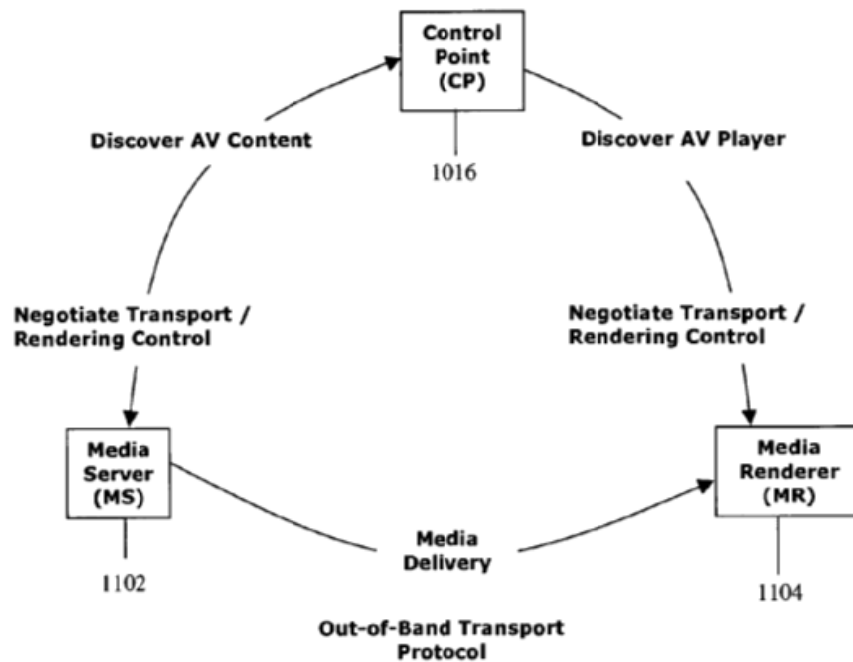
17. The selection of a transfer protocol and data format that is supported by both the MediaServer and MediaRenderer is critical to the delivery and rendering of media content because the MediaServer may support a given set of transfer protocols and a given set of data formats, and the MediaRenderer may support a different set of transfer protocols and a different

1 set of data formats. The MediaServer will not be able to send, and the MediaRenderer will not be  
2 able to receive, data via a transfer protocol that it does not support. Likewise, the MediaServer  
3 will not be able to send, and the MediaRenderer will not be able to render, data in an unsupported  
4 data format. The Control Point must therefore select a transfer protocol and a data format  
5 supported by both the MediaServer and the MediaRenderer. If the Control Point does not do so,  
6 the MediaServer may not be able to deliver the content, the MediaRenderer may not be able to  
7 receive the content, and/or the MediaRenderer may not be able to render the content.

8 18. After selecting a transfer protocol and a data format supported by both the  
9 MediaServer and MediaRenderer, the Control Point then specifies to either the MediaServer or  
10 the MediaRenderer the URI of the selected content item. Ex. 13 (UPnP AV Architecture  
11 specification) at 9 (step 6). The Control Point then instructs the MediaServer or MediaRenderer  
12 to play the content. *Id.* at 10 (step 7). The MediaServer then delivers the media content to the  
13 MediaRenderer using the specified transfer protocol and data format. *Id.* at 11.

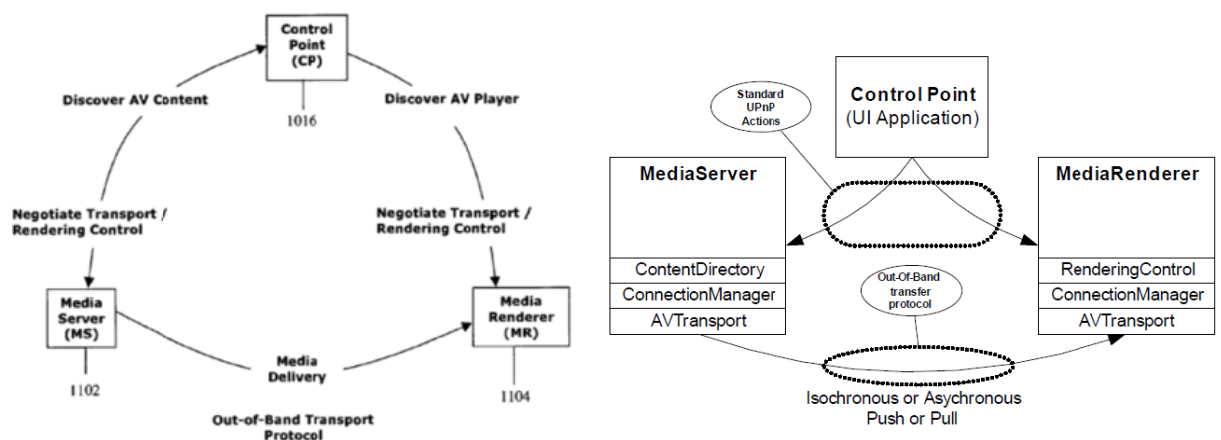
### 14 **III. THE '412 PATENT**

15 19. The '412 patent describes delivering media content from a media server to a media  
16 renderer. The '412 patent specification discloses a UPnP AV architecture that includes a Media  
17 Server (MS), a Media Renderer (MR), and a Control Point (CP), as shown below in the patent's  
18 Figure 11, which is a functional copy of the UPnP AV Architecture diagram shown above:  
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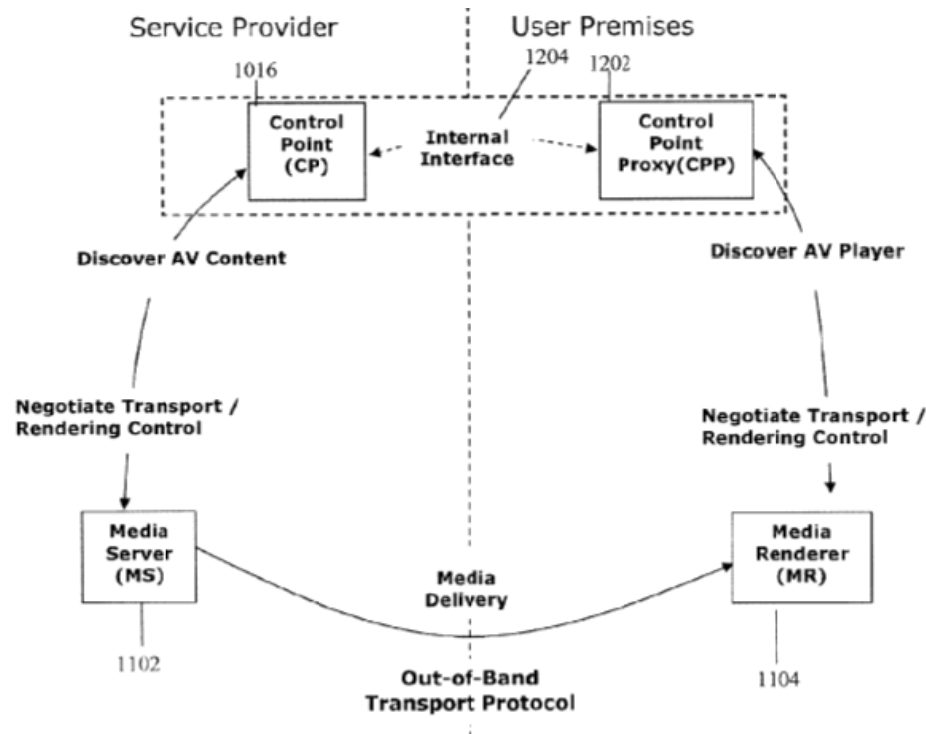


Declaration of Robert Buergi in Support of Apple's Responsive Claim Construction Brief ("Buergi Decl."), Ex. 1 at Fig. 11.

20. Shown below is a side-by-side comparison of Figure 3 from the UPNP AV Architecture specification and Figure 11 from the '412 patent. Ex. 13 at 5, Fig. 3; Buergi Decl., Ex. 1 at Fig. 11. As can be seen, each depicts a Control Point, a Media Server, a Media Renderer, and an out-of-band transfer protocol.



21. The '412 patent also describes an extension of the architecture shown in Figure 11, which is shown in its Figure 12 below. Buergi Decl., Ex. 1 at 16:33-36, Fig. 12.



22. The '412 patent explains that in this extended architecture, the CP is located in a wide area network and a Control Point Proxy ("CPP") is added to the user's local premises. Buergi Decl., Ex. 1 at 5:37-46, 17:7-17, 17:25-32, 60-63, Fig. 12. The CP communicates with the MS, the CPP communicates with the MR, and the CP and CPP communicate with each other. *Id.* at 17:12-32, Fig. 12. Delivery of media content is negotiated by the CP and CPP in cooperation, rather than by only the CP. *Id.* at 5:37-46, 17:12-24, 24:46-51, 25:58-62, 26:47-52.

#### IV. CLAIM CONSTRUCTION

##### A. Legal Principles Regarding Claim Construction

23. I understand that the words of a claim are generally given their ordinary and customary meaning, which is the meaning that the term would have to a person of ordinary skill in the art to which the patent pertains at the time of the invention. I understand that a person of ordinary skill in the relevant art is not an expert in the technical field at issue, but has normal skills and knowledge in that technical field.

24. I also understand that claim construction begins with the language of the asserted claims. I understand that the claims must be interpreted in light of the patent specification, and that the patent specification is highly relevant to the claim construction analysis. I understand

1 that the patent's prosecution history also may inform the proper construction of a claim, by  
2 demonstrating how the inventor understood the invention.

3 25. I understand that a patent's specification and file history are referred to as  
4 "intrinsic evidence." I understand that other resources that may be used to interpret claim  
5 language, such as dictionary definitions, are referred to as "extrinsic evidence." I understand that  
6 in some cases, extrinsic evidence such as dictionary definitions may be useful in construing a  
7 claim, but that such extrinsic evidence may not replace any meanings supplied by the intrinsic  
8 evidence, which includes the specification.

9 **B. "negotiate media content delivery between the MS and the MR" (claims 1, 2,**  
10 **20, 21, and 27)**

11 26. Claims 1, 2, 20, 21, and 27 of the '412 patent recite, in part, "negotiate media  
12 content delivery between the MS and MR." The claims recite that the CP logic and CPP logic  
13 cooperate to negotiate media content delivery between the MS and MR. Buergi Decl., Ex. 1 at  
14 24:49-51, 25:60-62, 26:51-53.

15 27. As discussed above, the relevant parts of the '412 patent specification describe an  
16 extension to the UPnP AV Architecture. Accordingly, one of ordinary skill in the art of the '412  
17 patent would understand the claim language "negotiate media content delivery between the MS  
18 and the MR" to refer to the typical negotiation of media content delivery between the MS and MR  
19 in the UPnP AV Architecture specification, i.e., steps 3-6 of the UPnP AV Architecture  
20 specification. Such negotiation refers to obtaining a list of supported transfer protocols and data  
21 formats from each of the MS and MR, select a matching pair of transfer protocols and data  
22 formats, and instructing the MS and MR to use the selected transfer protocol and data format in  
23 order to deliver media content from the MS to the MR.

24 28. As also discussed above, the selection of a transfer protocol and a data format  
25 supported by both the MS and the MR is critical to the delivery of media content from the MS to  
26 the MR because it ensures that the MS can transmit, and the MR can receive and render, the  
27 media content.

28 I declare under penalty of perjury under the laws of the United States of America that the



1 foregoing is true and correct, to the best of my knowledge.

2  
3 Dated: September 25, 2014

  
Sho Kou